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rather flattened above, convex below, sutures deeply impressed. Surface spirally nodulously ridged, the nodules running into waved longitudinal ribs. Aperture narrow, a little produced in front, contracted behind. Outer lip sinuous, angulated in the middle.

Dimensions.—Length 20 mill. Diam. 8 mill.

Hab.—Philippine Islands. My cabinet.

Observations.—This shell is allied to *Melania perfecta*, Mousson, from Java, but differs in being angulated, and in having a longer, narrower aperture; it is also a little smaller and the apical whorls are sculptured, not smooth. Since the above description was written, I have observed in the collection at the Academy fine specimens of *Melania Mauiensis*, Lea, the sculpturing of which somewhat resembles this species, but they are much stouter, more obtuse shells, with the periphery not angulated.

Descriptions of new Species of Fresh Water Mollusca, belonging to the Families AMNICOLIDÆ, VALVATIDÆ and LIMNÆIDÆ; inhabiting California.

BY GEO. W. TRYON, JR.

The following species of Shells sent to me by my friend Mr. Wm. M. Gabb, were principally collected by Rev. J. Rowell, of San Francisco,—a gentleman who has devoted much time to the study of the Mollusca of the State of California.

It is not without considerable hesitation that I propose new species in genera wherein the variations of form, due to climatal and other influences, are so great, and where the geographical distribution is frequently so extended; and it is only after very extensive comparisons with the related species which have already been characterized, that I select for description those among the suite sent to me which appear to be most distinct, leaving others unnamed, until a more extended exploration of the State shall give us a more perfect knowledge of the extent and relations of the Molluscan fauna inhabiting its waters.

A considerable number of shells belonging to the above families, appear to inhabit the entire breadth of the continent; adding to these the forms ascertained to be peculiar to Oregon and California, we find already decided indications that these States form the metropolis of the fresh-water Pulmonobranchiates of North America.

I have added to the descriptions of new species, a list of those already described, which have been sent to me by Mr. Gabb, because, in most cases, the localities are new and interesting.

AMNICOLIDÆ, Tryon.

1. AMNICOLA ROWELLII, Tryon, t. 1, f. 8, 9.

Description.—Shell depressed, wider than high, consisting of three and a half whorls, which are regularly convex and rapidly enlarging; spire small, but little elevated, apex acute, sutures well marked; base convex, except that the region surrounding the umbilicus is flattened and inclining towards the axis, its outer boundary, consequently, is marked by an angle; umbilicus small but very distinct; aperture half ovate, the labrum well rounded and thin, the labium but slightly rounded, thickened, elevated from the body-whorl, forming an acute angle with the labrum above, and not impinging on the umbilicus. Surface marked with close, regular, minute striæ, which become enlarged in the flattened umbilical region into sharp crowded lines visible without a glass.

Color light horn or yellowish, operculum darker. Operculum paucispiral, the lines of accretion very distinct and regular.

Dimensions.—Length 2.5 mill. Diam. maj. 4. mill., min. 3 mill. Length of apert. 2 mill., breadth $1\frac{1}{2}$ mill.

Hab.—Clear Lake, California. Rev. J. Rowell. My cabinet and cabinet of Mr. Rowell.

1863.]

Observations.—This species cannot be compared with any other hitherto described, being much more depressed, and widely distinct in the form of the umbilical region.

It may possibly form a species of the genus *Somatogyrus*, recently proposed by my friend, Mr. Theo. Gill, for a small Mollusc from Iowa, which I described in the Proceedings of the Academy for September, 1862.

2. POMATIOPSIS BINNEYI, Tryon, t. 1, f. 10.

Description.—Shell minute, elongated, consisting of four to five very convex whorls; apex somewhat obtuse; aperture ovate or nearly suborbicular, both lips rounded; umbilicus very small. Color light-horn.

Dimensions.—Length 3 mill. Diam. 1.6 millim. Length apert. 1.25 mill., breadth 1 mill.

Hab.—Bolinas, California. Rev. J. Rowell. My cabinet and cabinet of Mr. Rowell.

Observations.—Seven specimens of this very small and exceedingly fragile species were sent to me; they exhibit, however, all the stages of growth from the very young to adult form. None of them retained the operculum.

It is much smaller than any other species of *Pomatiopsis*, and is not likely to be confounded with any of them. It approaches nearest in form to two European species of *Bythinia*, *B. acuta* and *B. viridis*: the former, however, has a more lengthened, acute spire, and the latter is a more robust and ventricose shell.

AMNICOLA PROTEA, Gould, from Colorado Desert, described in Proc. Bost. Soc. N. Hist. v. 129, Oct., 1855, (read Dec. 20, 1854,) is the same as *Melania exigua*, Conrad, from same locality. Described in Proc. Acad. Nat. Sci. p. 263, Feb., 1855. (Read Feb. 13th, 1855.) The shell belongs to a new genus of the family Amnicolidæ. Some small fossil shells sent to me by my friend, Dr. F. B. Meek, appear to belong to the same genus. Of course Mr. Conrad's specific name will take precedence over that of Dr. Gould.

VALVATIDÆ.

3. VALVATA VIRENS, Tryon, t. 1, f. 11.

Description.—Shell turbiniform, consisting of four well rounded whorls, spire elevated, apex acute, sutures deeply indented; periphery almost angulated; umbilicus very wide; aperture oval or nearly round, the peristome merely touching the body above. Surface closely striate. Color varying from brilliant to dark green.

Dimensions.—Height 5 mill. Diam. maj. 5 mill., min. 4 mill. Length, apert. 2.5 mill., breadth 2 mill.

Hab.—Clear Lake, California. Wm. M. Gabb. My cabinet and cabinet of Mr. Gabb.

Observations.—A number of specimens of this species are before me, most of them being about two-thirds grown. It has no American analogue.

LIMNÆIDÆ.

4. LIMNÆA ADELINÆ, Tryon, t. 1, f. 12.

Description.—Shell thin, semi-transparent, body whorl large, wide, convex; spire small, consisting of five convex volutions, attenuating rapidly to an acute apex, sutures impressed; inner lip thin, reflected, but not covering the umbilical fissure, which is narrow; columella twisted; color light-horn, polished within the aperture, outer lip tinged with red within.

Dimensions.—Length 14 mill. Diam. maj. 8.5 mill. Length of aperture 9 millim., width 5 millim.

Hab.—San Francisco, California. Rev. J. Rowell. My cabinet and cabinet of Mr. Rowell.

[May,

Observations.—This shell is nearly allied to *L. catascopium*, Say, and perhaps more nearly to *L. intermedia*, Mich., of Europe. From the former it may be distinguished by being more fragile, more transverse, with a smaller, more rapidly attenuating spire, but principally by the presence of an umbilical fissure, which in *catascopium* is entirely concealed by the appression of the labium. In this and other respects it is very near to *L. intermedia*, which, however, has a shorter spire, of fewer volutions. I name this species after my sister, Miss Adeline S. Tryon, who has evinced much interest in conchological pursuits.

5. *LIMNÆA TRASKII*, Tryon, t. 1, f. 13.

Description.—Shell elongated, the spire drawn out and apex acute. Whorls six, convex, almost shouldered, sutures deeply impressed. Aperture small, oval, labrum well rounded, labium slightly rounded, not appressed below, nor covering the umbilicus, which, though small, is very distinct. Color light-horn or cinereous.

Dimensions.—Length 16 mill., diam. 8 mill. Length of aperture 7 mill.; breadth 5 mill.

Hab.—Mountain Lake, California. Rev. J. Rowell. My cabinet and cabinet of Mr. Rowell.

Observations.—At first I was disposed to regard this shell as a variety of *L. proxima*, Lea, but a comparison with the type specimens of that species shows the following differences: the volutions are not so oblique, and are more rounded, the aperture is also more rounded and the shell is umbilicated.

Named in honor of Dr. J. B. Trask, one of the pioneers of Californian Conchology.

LIMNÆA CAPERATA, Say. San Francisco. Oakland.

LIMNÆA FRAGILIS, Linn. San Francisco. Mountain Lake.

LIMNÆA UMBROSA, Say. San Francisco. Mountain Lake.

LIMNÆA REFLEXA, Say. Mountain Lake.

6. *PHYSA GABBII*, Tryon, t. 1, f. 14.

Description.—Shell large, thin, closely striated by the lines of growth; body whorl inflated, its upper half flattened so that the labrum appears angulated in the middle; spire moderate, apex acute, whorls six, convex, with distinct sutures.

Color light corneous, very much polished within; lip margined with red.

Dimensions.—Length 25 mill., diam. 13 mill., length of aperture 15 mill., breadth 8 mill.

Hab.—Mountain Lake, California; Rev. J. Rowell. Santa Ana River, Los Angeles Co., California; Wm. M. Gabb. My cabinet and cabinets of Mr. Rowell and Mr. Gabb.

Observations.—Several specimens of this fine large species were communicated to me by my friend Mr. Wm. M. Gabb, after whom I take great pleasure in naming it. It is a much larger, thinner species than *Ph. heterostropha*, Say, and is at once distinguished by the peculiar flattening of the superior portion of the body whorl. The same character will also distinguish it from *Ph. bullata*, Gould, in which species the aperture moreover is proportionately longer.

PHYSA GYRINA, Say. Mountain Lake.

PHYSA COSTATA, Newcomb. Clear Lake. (Original loc.)

PHYSA HUMEROSA, Gould. Colorado Desert. (Original loc.)

PHYSA VIRGATA, Gould. Santa Ana River, Los Angeles Co.

PHYSA HETEROSTROPHA, Say. Dry Creek, Butte Co. Clear Lake, Centerville, Oakland.

7. *ANCYLUS FRAGILIS*, Tryon, t. 1, f. 15.

Description.—Shell very small and fragile, sides nearly parallel or slightly incurved in the middle, but diverging anteriorly; ends rounded. Apex elevated, acute, curved backwards, with about two-thirds of the shell anterior to it.

1863.]

Dimensions.—Size of the largest specimen. Length 4 mill., breadth 1.15 mill., height 1 mill. Most of the specimens do not exceed two-thirds of these dimensions.

Hab.—Laguna Honda, California. Rev. J. Rowell. My cabinet and cabinet of Mr. Rowell.

Observations.—This species is smaller, thinner, and wants the convex lateral margins of our *Anc. rivularis*, Say. It agrees with that shell, however, in the greater width of its anterior end, while in the shape of its lateral margins it resembles *Anc. parallelus*, Hald. It is much the smallest of our species.

PLANORBIS AMMON, Gould. Pajaro River, Monterey Co.

PLANORBIS TRIVOLVIS, Say. Mountain Lake.

PLANORBIS GRACILENTUS, Gould. Mountain Lake.

PLANORBIS VEMICULARIS, Gould. Mountain Lake.

PLANORBIS ORERCULARIS, Gould. Mountain Lake.

PLANORBIS NEWBERRYI, Lea. Clear Lake.

(Communicated by the Smithsonian Institution.)

Notes on the BIRDS of Jamaica.

BY W. T. MARCH.

With remarks,

BY S. F. BAIRD.*

I.

VULTURIDÆ.

1. *CATHARTES AURA*.—The John Crow Vulture is the scavenger of tropical towns and villages, and so highly are his services in this respect appreciated, that he is, in some of the islands, considered entitled to legislative protection. An ordinance of the corporation of the city of Kingston imposed a penalty on any person destroying one of them within the precincts of the city. The occurrences related by Mr. Gosse, in "Birds of Jamaica," would seem to lead to the inference that the two senses of seeing and smelling, sometimes singly, and at other times unitedly, give to the *aura* the facility with which he traces his food; but they are not conclusive. Is his sense of smelling so acute as to enable the John Crow to distinguish, at a distance, the stench of a putrid carcass from the atmosphere of offensive effluvia emanating from, and floating about, his own vile body? With the knowledge that, in the tropics, a dead carcass, or dying animal, and often even fresh garbage, is quickly surrounded and covered by swarms of flies, hovering, and buzzing above and about it, or the place in which it is deposited, may we not be equally led to the conclusion, that the Vulture is directed by the flies, and that sight alone is the sense by which he finds his necessary food? By whatever sense he is led, he certainly traces his food from a far distance. When a dead carcass has been discovered by some, numbers of other Vultures are directed by the motion of those gathering together, and soaring at a great height, sweeping round and round in irregular circles. Shortly after the commencement of the Rebellion of 1831, and long after its suppression, the *Aura* Vulture was a rare object in the landscape of the midland and eastern parishes; they had all departed for the scene of carnage in the West, where they remained for many months.

The *Cathartes aura* breeds in solitary pairs. I have never seen them, or

*Specimens of most of the birds, and of the eggs described, have been presented by Mr. March to the Smithsonian Institution, under the numbers which they bear in his communication. (B.)

[May,